CHAPTER 4 MODEL CALIBRATION AND VALIDATION RESULTS

Model calibration was accomplished at three levels: system wide, regional level, and link level. System wide calibration was made to make sure model estimated volumes and trip length distribution agree with the observed ones within a reasonable range. Regional level calibration included volume summary comparison at cordon lines and screen lines between the modeled and the observed. Link level calibration included checking and adjusting volumes on major facilities, such as I-85 and I-40, as well as all other classifications of roads. VMT is another important index for model calibration and validation which should be performed at both the system wide level and the regional level.

The model parameters are "tweaked" and adjusted based on the validation results to obtain a validated 2006 North Carolina truck network model. A typical approach follows these steps:

- Conduct reasonableness checks at each stage of the modeling process, as well as after the assignment step.
- Network development (density, coverage, discontinuities, and minimum paths); TAZ development (coverage, number, and consistency of geography with network density). Model calibration adjustments include modeling network and TAZs iteratively such that they are consistent and ready for modeling.
- Trip generation (balance of productions and attractions, average trip rate per employee). Model calibration adjustments include balancing the trip ends and adjusting the trip rates.
- Trip distribution (trip length distributions, control total flow). Model calibration adjustments include adjusting the gravity model parameters.
- Traffic assignment (estimated volumes versus ground counts, screen line balances, VMT). Model calibration adjustments include adjusting speed limits as well as the theta parameter in the assignment model if necessary.

Truck Traffic Ground Count Data

NCDOT conducted a statewide truck traffic count survey in 2006 and 2007 and collected truck trip classification counts at 724 locations across the state, as shown in Figure 52 below. Truck traffic is classified by truck type, which includes bus, 2-, 3-, and 4-axle single-unit, 4-, 5-, and 6-axle single-trailer, and 5-, 6-, and 7-axle multi-trailer. Of these 724 locations, 460 are on the highway links that are represented in the model network. These counts were used as a key element for model calibration and validation.